

Mineral Industry Surveys

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NICKEL IN NOVEMBER 2004

Reported domestic nickel consumption in November, on a daily average basis, was 11% less than that of October, according to the U.S. Geological Survey. Daily average nickel consumption of cathode, pellets, briquets, powder, and ferronickel for stainless steel was 54.4 metric tons per day (t/d), 19% less than the 67.1 t/d for October 2004 and 43% less than the 95.8 t/d (revised) for November 2003. Consumption of >99.8% nickel metal to make superalloys (such as INCONEL 718 and WASPALOY) decreased by 8% from October levels, on a daily average basis. Consumption to make corrosion-resistant, less stress-resistant nickel-base alloys (such as INCONEL 600 and Nickel 200) decreased by 2% on a daily average basis. Sales to plating companies averaged 25.1 t/d, about 16% less than the October sales figure of 30.0 t/d.

On November 30, U.S. consumer stocks of cathode, pellets, briquets, and powder totaled 1,250 metric tons (t), 5% less than the 1,310 t (revised) on October 31 and 12% less than the 1,390 t reported for yearend 2003. Stocks in London Metal Exchange (LME) warehouses worldwide totaled 17,358 t on November 30, 23% greater than the 14,094 t on October 31.

The United States imported 112,000 t of primary nickel in the first 10 months of 2004, 3% more than the 109,000 t for the corresponding period of 2003. Trade data for November will appear in a subsequent report.

Update: China and Venezuela to participate in the proposed expansion of Cuba's nickel industry

On December 15, 2004, the Presidents of Cuba and Venezuela reaffirmed their 2000 trade accords and signed two new wide-ranging economic agreements. The new agreements could help boost expansion and modernization of the Cuban nickel industry. In November, China agreed to enter into a new joint venture that would salvage the partially completed mining complex at Las Camariocas. China has agreed to invest \$500 million in the Las Camariocas joint venture and was considering investing an additional \$1.3 billion to develop a large laterite deposit in Camaguey Province. Las Camariocas would produce 22,500 metric tons per year (t/yr) of nickel; the Camaguey complex, 50,000 t/yr of nickel.

Venezuelan coal would play an important role in the proposed three-country economic initiative. Some 500,000 t/yr of coal would be shipped from Venezuela to thermal powerplants in eastern Cuba. Chinese capital could be used to fund construction of a new powerplant in Holguin Province. Part of the new nickel production would be shipped to stainless steel plants in coastal China, with the rest going to a greenfield stainless steel plant proposed for the Venezuelan region of Guayana. Because Venezuela is a leading exporter of iron ore and direct reduced iron, the proposed Guayana steel plant should have no difficulty obtaining iron units. Venezuela also has excess electrical power generation capacity, owing to its abundant reserves of petroleum and natural gas (Reuters Limited, 2004[§]).

Metals Enterprise, a joint venture of Sherritt International Corporation and the Government of Cuba, was also considering expanding its existing pressure acid leaching complex at Moa. The plant is currently capable of producing 33,000 t/yr of nickel plus cobalt in mixed sulfides. On March 3, 2005, Sherritt and its Cuban partner agreed to increase the production capacity of the Moa operation to 49,000 t/yr. The \$450 million expansion was scheduled to be completed by yearend 2007 (Sherritt International Corporation, 2005[§]). If successful, the expansion and the two previously mentioned greenfield projects could more than double Cuban nickel production to 150,000 t/yr from 74,000 t/yr.

Internet References Cited

- Reuters Limited, 2004 (December 8), Cuba, China y Venezuela acuerdan triangulación suministro carbon [Cuba, China and Venezuela agree on a trilateral accord for the supply of coal], accessed March 9, 2005, via URL <http://www.invertia.com/noticias>.
- Sherritt International Corporation, 2005 (March 4), 2004 Net earnings of \$160 million set new record; Metals expansion base agreement signed, accessed March 9, 2005, via URL http://media.corporate-ir.net/media_files.

[§]References that include a section mark (§) are found in the Internet References Cited section.

TABLE 1
CONSUMPTION OF NICKEL (EXCLUSIVE OF SCRAP), BY FORM AND USE¹

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total	Total year to date
2003:					
November	4,470	1,190	30	5,690	57,500
December	4,130	902	30	5,060	62,500
January-December	53,500	8,620	412	62,500	XX
2004:					
January	4,290	595	34	4,920	4,920
February	4,940	455	26	5,420	10,300
March	5,010	529	36	5,580	15,900
April	4,660	458	52	5,170	21,100
May	5,250	528	27	5,810	26,900
June	5,210	556	39	5,800	32,700
July	4,840	536	43	5,420	38,100
August	4,850	677	36	5,560	43,700
September	4,520	465	47	5,030	48,700
October	5,140 ^r	633	41	5,820 ^r	54,500 ^r
November:					
Steel:					
Stainless and heat resisting	1,230	403	W	1,630	21,700
Alloy (excludes stainless)	W	--	--	W	W
Superalloys	1,020	--	W	1,020	10,900
Copper-nickel alloys	W	--	--	W	W
Electric, magnetic, and expansion alloys	69	--	--	69	180
Other nickel & nickel alloys	W	--	W	W	W
Cast iron	W	--	--	W	W
Electroplating (sales to platers)	752	--	--	752	9,740
Chemical and chemical uses	W	--	--	W	W
Other uses	1,520	--	37	1,550	17,000
Total reported	4,590 ²	403	37	5,020	59,600
Total all companies (calc) ³	XX	XX	XX	9,450	112,000
2004: January-November	53,300	5,840	419	59,400	XX
2003: January-November	49,400	7,720	382	57,500	XX

^rRevised. W Withheld to avoid disclosing company proprietary data; included in "Other uses" category. XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Of consumption, 3,630 metric tons were consumed as cathodes and pellets, the remainder as briquets and powder.

³Figures represent calculated apparent consumption; based on the revised proportion of reported primary consumption (53.17%) to apparent primary consumption for 2003.

TABLE 2
ENDING STOCKS OF NICKEL (EXCLUSIVE OF SCRAP) HELD BY CONSUMERS, BY FORM AND USE ^{1,2}

(Metric tons, nickel content)

Period	Cathodes, pellets, briquets, and powder	Ferronickel	Oxide-sinter, salts, and other forms	Total
2003:				
November	1,410	227	59	1,690
December	1,390	260	46	1,700
2004:				
January	1,390	186	55	1,630
February	1,660	111	44	1,810
March	1,630	108	40	1,780
April	1,760	227	34	2,020
May	1,360	158	42	1,560
June	1,450	185	45	1,680
July	1,290	147	30	1,470
August	1,490	139	42	1,670
September	1,660 ^r	167	41	1,870 ^r
October	1,310 ^r	128	50	1,490 ^r
November:				
Steel (stainless, heat resisting and alloy)	526	132	(3)	658
Nonferrous alloys ⁴	703	W	(3)	703
Foundry (cast irons)	(3)	--	--	(3)
Chemical (catalysts, ceramics, plating salt, etc.) and unspecified uses	17	--	78	95
Total	1,250	132	78	1,460

^rRevised. W Withheld to avoid disclosing company proprietary data; included in "Oxide-sinter, salts, and other forms" category. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Stocks held by companies that consume nickel in more than one end use category are credited to the major category. Stocks are subject to revisions owing to inventory adjustments.

³Included in the "Chemical and unspecified uses" category.

⁴Includes superalloys, nickel-copper and copper-nickel alloys, permanent magnet alloys, and other nickel alloys.

TABLE 3
CONSUMPTION AND ENDING STOCKS OF PURCHASED SECONDARY NICKEL, BY USE¹

(Metric tons, nickel content)

Period	Consumption			Stocks		
	Ferrous scrap ²	Nonferrous scrap ³	Total scrap	Ferrous scrap ²	Nonferrous scrap ³	Total scrap
2003:						
November	4,960	668	5,620	2,950	97	3,050
December	4,930	647	5,580	2,810	85	2,900
January-December	57,600	8,330	65,900	XX	XX	XX
2004:						
January	5,050	698	5,750	2,700	73	2,770
February	4,780	708	5,490	2,710	79	2,790
March	5,520	937	6,460	3,270	80	3,350
April	5,280	865	6,140	2,950	82	3,030
May	5,210	801	6,010	2,730	63	2,790
June	5,090	804	5,890	2,750	85	2,830
July	4,850	675	5,520	2,640	76	2,720
August	5,010	952	5,970	2,410	74	2,480
September	4,390	809	5,200	2,800	77	2,880
October ^r	4,860	706	5,560	2,840	71	2,910
November	4,700	733	5,440	2,620	69	2,680
January-November	54,700	8,690	63,400	XX	XX	XX

^rRevised. XX Not applicable.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Nickel content is calculated from an average nickel content and the reported gross weight of scrap.

³Combined consumption and stocks of aluminum-base, copper-base, and nickel-base scrap.

TABLE 4
U.S. IMPORTS FOR CONSUMPTION OF NICKEL, BY COUNTRY¹

(Metric tons, nickel content)²

Period and country of origin	Cathodes pellets, and briquets	Powder and flakes	Ferro- nickel	Metal- lurgical- grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total ³	Total year to date ⁴	Wrought nickel
2003:										
October	7,270	565	1,010	20	326	715	255	10,200	118,000	34
November	7,030	625	932	--	318	889	324	10,100	128,000	28
December	6,230	860	471	(5)	530	821	284	9,190	137,000	34
January-December	99,300	9,130	13,100	90	4,790	6,690	3,790	137,000	XX	660
2004:										
January	7,360	829	1,040	40	489	933	435	11,100	11,100	77
February	7,200	834	1,070	161	667	1,020	485	11,400	22,600	49
March	10,700	812	806	134	1,430	1,660	376	15,900	38,400	72
April	10,700	720	1,680	23	574	908	296	14,900	53,400	53
May	8,530	564	941	--	698	680	381	11,800	65,200	55
June	9,190	732	978	--	553	680	324	12,500	77,600	86
July	7,370	914	1,070	--	624	663	374	11,000	88,600	79
August	9,770	800	1,020	24	585	928	434	13,600	102,000	116
September	6,590	571	1,080	207	689	697	339	10,200	112,000	88
October:										
Australia	844	80	--	--	9	--	--	933	8,980	--
Brazil	100	--	--	--	--	--	--	100	1,890	--
Canada	4,950	370	--	210	75	609	3	6,220	57,600	--
Colombia	--	--	406	--	--	--	--	406	2,890	--
Dominican Republic	--	--	695	--	--	1	--	696	6,460	--
Finland	408	340	--	--	--	1	44	793	5,940	--
France	83	--	80 ⁶	--	203	--	23	389	2,150	7
Germany	(5)	(5)	--	--	37	--	58	95	1,660	22
Japan	--	3	--	--	6	--	50	59	720	7
Mexico	--	--	--	--	27	143	2	172	1,880	--
New Caledonia	--	--	100	--	--	--	--	100	950	--
Norway	1,660	--	--	--	--	--	--	1,660	12,500	--
Russia	2,670	--	--	--	--	--	--	2,670	15,700	--
South Africa	--	60	--	--	--	--	--	60	718	--
Sweden	--	1	--	--	--	--	--	1	39	--
United Kingdom	230	115	--	--	129	--	7	481	3,270	(5)
Venezuela	--	--	--	--	--	18	--	18	417	--
Zimbabwe	200	--	--	--	--	--	--	200	861	--
Other	--	7	--	--	49	8	134	198	2,980 ⁶	7
Total	11,100	976	1,280	210	535	780	321	15,300	128,000	43
2004: January-October	88,500	7,750	11,000	798	6,850	8,950	3,770	128,000	XX	717
2003: January-October	86,000	7,650	11,700	91	3,940	4,980	3,190	118,000	XX	597

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemicals category includes chlorides (25%); sulfates (22%); other salts (22%); supported catalysts (22%); and oxide, sesquioxide, and hydroxide (65%).

³Excludes wrought nickel.

⁴May include revisions for prior months.

⁵Less than 1/2 unit.

⁶All or part of these data have been referred to the U.S. Census Bureau for verification.

Source: U.S. Census Bureau.

TABLE 5
U.S. EXPORTS OF NICKEL, BY COUNTRY¹

(Metric tons, nickel content)²

Period and country of destination	Cathodes pellets, and briquets	Powder and flakes	Ferro- nickel	Metal- lurgical- grade oxide	Waste and scrap	Stainless steel scrap	Chemicals	Total ³	Total year to date	Wrought nickel
2003:										
October	133	153	12	4	1,010	3,270	276	4,850	45,900	141
November	210	127	1	5	819	1,600	371	3,130	49,000	102
December	44	92	10	4	809	3,190	441	4,590	53,600	72
January-December	996	1,100	181	161	9,460	37,800	3,900	53,600	XX	2,890
2004:										
January	52	129	15	5	657	2,370	399	3,630	3,630	153
February	85	166	--	17	540	2,550	396	3,750	7,380	54
March	116	150	(4)	8	1,000	3,800	497	5,570	12,900	59
April	144	132	3	8	1,070	2,660	563	4,570	17,500	227
May	54	127	23	4	1,290	3,100	323	4,920	22,400	120
June	187	138	3	4	1,310	4,720	567	6,930	29,400	65
July	18	171	(4)	2	1,160	2,600	473	4,420	33,800	100
August	39	172	--	1	1,190	2,330	200	3,940	37,700	68
September	112 ^r	238	--	7	1,170	2,610	498	4,640	42,400	86
October:										
Australia	--	--	--	--	39	--	--	39	61	(4)
Belgium	--	4	--	--	--	3	14	21	236	--
Canada	1	11	--	--	909	144	73	1,140	12,200	5
China	--	70	1	--	10	1,960	2	2,050	10,100	5
Finland	--	--	--	--	--	--	(4)	(4)	4,600	--
Germany	--	9	--	--	28	3	3	43	643	3
India	--	--	--	--	7	190	--	197	1,610	--
Italy	--	15	--	--	--	--	--	15	83	2
Japan	1	43	--	(4)	10	11	22	87	870	3
Korea, Republic of	--	5	--	--	--	803	11	819	6,750	2
Mexico	57	2	--	2	--	38	5	104	949	1
Netherlands	--	27	--	--	--	13	--	40	1,090	--
South Africa	--	--	--	--	17	--	1	18	48	--
Spain	--	--	--	--	--	1	--	1	326	--
Sweden	--	--	--	--	--	--	--	--	286	--
Taiwan	--	(4)	--	--	--	275	4	279	2,900	(4)
United Kingdom	1	3	--	(4)	81	1	(4)	86	1,010	2
Other	(4)	68	--	--	9	171	62	310	3,850	21
Total	60	257	1	2	1,110	3,620	197	5,240	47,600	44
2004:January-October	869	1,680	44	58	10,500	30,400	4,110	47,600	XX	976
2003:January-October	742	877	170	151	7,830	33,000	3,090	45,900	XX	2,710

^rRevised. XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²The nickel contents are assumed to be as follows: metallurgical-grade oxide (77%), waste and scrap (50%), and stainless steel scrap (7.5%). The chemicals category includes chlorides (25%); sulfates (22%); other salts (22%); supported catalysts (22%); and oxide, sesquioxide, and hydroxide (65%).

³Excludes wrought nickel.

⁴Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF NICKEL ALLOYS, BY COUNTRY¹

(Metric tons, gross weight)

Period and country of origin	Unwrought alloyed ingot	Bars, rods and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date
2003:									
October	204	307	443	305	15	162	95	1,530	15,000
November	195	239	331	210	23	89	156	1,240	16,300
December	314	169	388	215	45	704	147	1,980	18,300
January-December	1,910	2,520	5,750	3,330	214	2,770	1,770	18,300	XX
2004:									
January	102	278	286	193	14	134	133	1,140	1,140
February	165	214	362	251	8	374	238	1,610	2,750
March	102	166	446	213	18	362	459	1,770	4,520
April	345	255	504	164	44	773	172	2,260	6,770
May	123	269	494	131	14	231	115	1,380	8,150
June	227	344	517	301	40	136	100	1,670 ^r	9,820 ^r
July	271	322	504	192	32	140	87	1,550	11,400
August	324	251	496	236	31	89	109	1,540	12,900
September	528	193	440	192	30	317	79	1,780	14,700
October:									
Australia	112	--	--	--	--	--	--	112	757
Belgium	21	--	(2)	1	--	--	(2)	22	111
Canada	--	(2)	--	--	--	14	2	16	166
China	8	4	--	--	--	--	76	88	374
France	--	--	58	2	--	10	3	73	1,240
Germany	18	121	195	206	7	93	1	641	6,500
Italy	--	99	10	--	--	--	26	135	1,210
Japan	--	(2)	7	1	--	3	(2)	11	598
Mexico	--	--	--	--	--	--	31	31	375
Netherlands	--	--	--	--	--	--	20	20	163
South Africa	78	--	--	--	--	--	--	78	378
Sweden	--	23	199	4	--	13	--	239	2,470
United Kingdom	31	29	2	(2)	--	11	2	75	934
Other	27	9	6	1	--	4	45	92	1,040
Total	295	285	477	215	7	148	206	1,630	16,300
2004: January-October	2,480	2,580	4,530	2,090	238	2,700	1,700	16,300	XX
2003: January-October	1,400	2,110	5,040	2,900	146	1,980	1,470	15,000	XX

^rRevised. XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 7
U.S. EXPORTS OF NICKEL ALLOYS, BY COUNTRY¹

(Metric tons, gross weight)

Period and country of destination	Unwrought alloyed ingot	Bars, rods and profiles	Wire	Plates and sheets	Foil	Tubes and pipes	Other alloyed articles	Total	Total year to date
2003:									
October	206	802	55	396	55	255	253	2,020	22,100
November	274	621	121	382	49	254	208	1,910	24,000
December	379	571	69	350	107	203	199	1,880	25,900
January-December	6,660	7,960	1,190	3,960	661	2,420	3,050	25,900	XX
2004:									
January	522	731	155	366	9	118	231	2,130	2,130
February	543	777	155	343	15	172	299	2,300	4,440
March	980	640	92	491	30	184	333	2,750	7,190
April	283	649	99	472	22	144	303	1,970	9,160
May	457	976	168	334	46	119	543	2,640	11,800
June	511	722	130	427	33	170	272	2,270	14,100
July	614	1,100	177	350	11	132	244	2,630	16,700
August	629	760	176	234	10	123	221	2,150	18,800
September	1,010	1,080	169	389	16	163	257	3,090	21,900
October:									
Australia	--	(2)	1	1	--	10	(2)	12	255
Belgium	87	119	--	28	--	(2)	(2)	234	2,070
Canada	88	47	9	26	4	39	22	235	2,360
China	3	5	1	41	--	7	41	98	970
France	137	90	--	44	(2)	2	(2)	273	2,960
Germany	2	53	7	25	(2)	5	1	93	1,020
India	--	10	(2)	1	--	2	--	13	96
Ireland	1	--	(2)	2	--	--	(2)	3	20
Italy	31	23	(2)	22	(2)	1	1	78	900
Japan	132	15	1	16	(2)	1	5	170	3,170
Korea, Republic of	(2)	13	(2)	40	--	4	1	58	804
Mexico	(2)	16	88	29	(2)	33	134	300	2,660
Netherlands	--	2	7	5	--	1	2	17	266
Singapore	3	2	2	4	2	(2)	(2)	13	135
Spain	1	(2)	1	1	--	(2)	(2)	3	56
Sweden	--	--	(2)	11	--	--	1	12	141
Switzerland	1	1	--	1	--	3	(2)	6	227
Taiwan	2	1	(2)	6	--	2	1	12	339
United Kingdom	18	254	6	30	(2)	14	5	327	3,360
Other	11	125	67	57	20	54	22	356	2,460
Total	517	776	190	390	26	178	236	2,310	24,200
2004: January-October	6,070	8,210	1,510	3,800	216	1,500	2,940	24,200	XX
2003: January-October	6,010	6,770	996	3,230	506	1,960	2,640	22,100	XX

XX Not applicable. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 8
NICKEL CONSUMPTION IN CAST AND WROUGHT PRODUCTS

	Percent	
	Wrought	Cast
November 2004:		
Stainless and heat resisting steels	71	29
Alloy steels	99	(1)
Superalloys	90	10
Copper-nickel alloys	91	9
Other nickel-base alloys	100	(1)

¹Less than 1/2 unit.

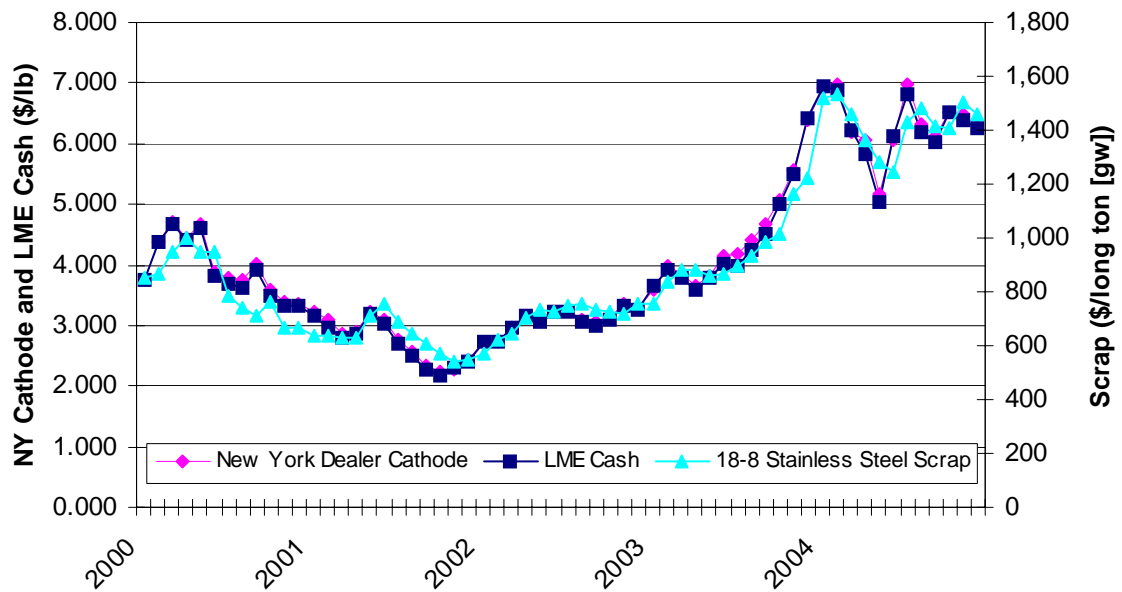
TABLE 9
NICKEL PRICES

Date	Platts Metals Week				American Metal Market, 18/8 Stainless steel scrap Pittsburgh
	Cathode NY Dealer \$/lb.	LME Cash mean ¹ \$/t	LME Cash mean ¹ \$/lb.	18/8 Stainless steel scrap Free market \$/long ton (gw)	18/8 Stainless steel scrap Pittsburgh \$/long ton (gw)
2003:					
Average for month of:					
November	5.568	12,086.500	5.482	1,153	1,160
December	6.390	14,162.500	6.424	1,262	1,222
Yearly average	4.446	9,629.469	4.368	961	942
2004:					
Average for week ending:					
November 5	6.35-6.73	13,801.500	6.260	1,475-1,525	1,550-1,575
November 12	6.46-6.66	13,995.500	6.348	1,475-1,525	1,550-1,575
November 19	6.71-6.76	14,261.500	6.469	1,500-1,525	1,550-1,575
November 26	6.43-6.73	14,066.500	6.380	1,500-1,525	1,550-1,575
December 3	6.46-6.70	13,894.500	6.302	1,500-1,525	1,550-1,575
December 10	5.98-6.28	12,942.000	5.870	1,490-1,530	1,500-1,525
December 17	5.98-6.26	13,040.000	5.915	1,375-1,450	1,500-1,525 ^r
December 24	6.26-6.94	14,583.000	6.615	1,400-1,450	1,500-1,525 ^r
December 31	6.75-6.96	15,074.167	6.838	1,400-1,450	1,500-1,525
Average for month of:					
January	6.900	15,326.548	6.952	1,517	1,463
February	6.968	15,145.125	6.870	1,537	1,585
March	6.203	13,715.000	6.221	1,458	1,563 ^r
April	6.056	12,848.125	5.828	1,397	1,503
May	5.185	11,118.289	5.043	1,281	1,367
June	6.063	13,533.523	6.139	1,241	1,208
July	6.990	15,023.295	6.814	1,430	1,402
August	6.320	13,679.524	6.205	1,481	1,560
September	6.112	13,270.909	6.020	1,405	1,470
October	6.523	14,404.286	6.534	1,413	1,470
November	6.488	14,045.455	6.371	1,506	1,562
December	6.286	13,768.810	6.245	1,457	1,523

^rRevised.

¹Mean of the cash buyer price and the cash seller and settlement price.

2000-2004 AVERAGE MONTHLY PRICES
 (Derived from Metals Week and American Metal Market quotations)



2000-2004 STOCKS

